

What is claimed is:

1. A smart hard-disk drive (sHDD) system, comprising:
  - a head-disk assembly, said head-disk assembly further comprising at least a disk platter, at least a head and a rotor;
  - a first printed-circuit board, said printed-circuit board further comprising at least a portion of HDD electronics, whereby said HDD electronics control data communication and movement of said head-disk assembly; and
  - a host controller, whereby said host controller controls data communication of said sHDD system when said sHDD system is connected with an external multimedia device.
2. The sHDD system according to claim 1, wherein said host controller is a host/slave controller, said host/slave controller performing interface conversion when said sHDD system is connected with an external computer.
3. The smart hard-disk drive system according to claim 1, further comprising a USB or IEEE 1394 interface, said sHDD system communicating with said external multimedia device through said interface.
4. The sHDD system according to claim 1, further comprising a second printed-circuit board, wherein said host controller is located on said second printed-circuit board.
5. The sHDD system according to claim 1, wherein said host controller is located on said first printed-circuit board.
6. The sHDD system according to claim 1, wherein said host controller is integrated with said HDD electronics.
7. The sHDD system according to claim 1, wherein said host controller complies with USB host protocol.
8. The sHDD system according to claim 1, wherein said host controller complies with USB-On-The-Go protocol.

9. The sHDD system according to claim 1, further comprising at least one of the following elements:
- A) a battery chamber;
  - B) a power input jack;
  - C) a hybrid receptacle;
  - D) a type-B plug;
  - E) a retractable connection wire.
10. The sHDD system according to claim 1, wherein said head-disk assembly further comprising a shell, said shell having a first width on one end and second width on the other end, said first width being larger than said second width.
11. The sHDD system according to claim 1, wherein the files and directories in said hard-disk drive are organized into a hierarchy structure.
12. A HDD-based portable electronic system, comprising:
- a head-disk assembly (HDA), said HDA further comprising at least a disk platter, at least a head, and a rotor;
  - a printed-circuit board, said printed-circuit board further comprising at least an HDA interface, at least a portion of the HDD circuitry, and at least a portion of the system circuitry, wherein said HDA interface provides electrical connections between said HDA and said printed-circuit board.
13. The portable HDD-based electronic system according to claim 12, wherein said system circuitry comprises a host controller.
14. The portable HDD-based electronic system according to claim 12, further comprising only one shell with mechanical strength between said platter and at least one external surface of said portable system.
15. The portable electronic system according to claim 12, wherein said portable electronic system is an HDD-based personal digital assistance (HDD-PDA).
16. An HDD-based camcorder, comprising:

a holding structure, whereby a hard-disk drive can be attached to said camcorder by said holding structure; and

an interface, whereby said HDD-based camcorder can communicate with said hard-disk drive through said interface, and the videos captured by said hard-disk drive is stored to said hard-disk drive without first being stored on a tape or a compact-disc.

17. The HDD-based camcorder according to claim 16, further comprising a DRAM-based buffer memory.
18. The HDD-based camcorder according to claim 16, wherein the disk platter of said hard-disk drive is larger than 1.5".
19. A host apparatus, comprising:
  - a first interface, whereby said first interface can be connected with a passive hard-disk drive;
  - a second interface, whereby said second interface can be connected with a multimedia device;
  - a host controller, whereby said host controller can control the data communication between said passive hard-disk drive and said multimedia device.
20. The host apparatus according to claim 19, wherein at least one of said first and second interfaces is a USB or IEEE 1394 interface.